depends essentially on the rainfall of the wet season combined with the power of the soil to store it away at considerable depths, but to bring it to the surface by capillary action when needed. The normal rainfall of each month is given in the preceding table from which we see that the sum for October, November, and December is 3.25 inches, and for January, February, March, April, and May 5.97 inches, making the total for the wet season 9.22 inches. For the dry season, June–September, the total is 0.31 inches. The actual rainfalls for the successive wet and dry seasons have been as follows, according to Mr. Carpenter's table:

Wet season.		Dry season.	
October to May.	Rainfall.	June to September.	Rainfall.
	Inches.		*Inches.*
1849–50		1850	0.68
1850–51	8.41	1851	0.02
1851–52	9.88	1852	0.40
1852–53	10.84	1853	0.26
1853–54	10.99	1854	1.53
1854–55	12.17	1855	0.04
1855–56	9.85	1856	0.07
1856–57	4.78	1857	0.06
1857–58	7.56	1858	0.33
1858–59	6.59	1859	0.02
1859–60	6.70	1860	0.19
1860–61	7.76	1861	1.78
1861–62	15.75	1862	0.59
1862–63	3.76	1863	0.36
1863–64	5.25	1864	0.12
1864–65	9.63	1865	1.30
1865–66	11.63	1866	0.10
1866–67	13.93	1867	0.30
1867–68	11.44	1868	0.56
1868–69	11.22	1869	0.05
1869–70	5.54	1870	0.11
1870–71	5.06	1871	0.00
1871–72	7.36	1872	0.18
1872–73	8.18	1873	1.95
1873–74	15.07	1874	0.23
1874–75	5.82	1875	0.62
1875–76	9.99	1876	0.17
1876–77	3.66	1877	0.00
1877–78	16.10	1878	0.16
1878–79	7.88	1879	0.07
1879–80	14.77	1880	0.47
1880–81	9.26	1881	0.10
1881–82	9.50	1882	0.08
1882–83	4.92	1883	0.08
1883–84	25.97	1884	0.18
1884–85	8.80	1885	0.19
1885–86	16.83	1886	0.07
1886–87	8.33	1887	0.05
1887–88	9.82	1888	0.09
1888–89	11.05	1889	0.14
1889–90	14.98	1890	0.65
1890–91	10.47	1891	0.13
1891–92	8.65	1892	0.18
1892–93	9.21	1893	0.00
1893–94	5.01	1894	0.06
1894–95	11.86	1895	0.01
1895–96	6.34	1896	0.14
1896–97	11.66	1897	0.01
1897–98	4.98	1898	0.09
1898–99	5.31	1899	0.34
Average	9.61	Average	0.30

This important table shows that there have been eighteen wet seasons in which rain has been abundant and five seasons in which the rainfall has been less than 5 inches, and therefore decidedly insufficient. The smallest amounts were 3.66 inches for the season of 1876–77, and 3.76 inches for that of 1862–63. The number of times that any given rainfall occurred is as follows:

Wet season.		Dry season.	
Rainfall.	No. of cases.	Rainfall.	No. of cases.
3.00– 4.99	5	0.00–0.49	41
5.00– 6.99	9	0.50–0.99	5
7.00– 8.99	9	1.00–1.50	1
9.00–10.99	11	1.50–2.00	3
11.00–12.99	7		
13.00–14.99	3		
15.00–16.99	4		
17.00, etc	1		
Total	49	Total	50

This table shows that there is a fair prospect of having 15 or 16 inches of rainfall during the wet season four times in fifty years, or once every thirteen years, but that rainfalls above that are much less likely. On the other hand, rainfalls of 3 and 4 inches occur on the average once in every ten years, and rainfalls less than that are about as likely to occur as the great rainfalls above 17 inches. There is no evidence of any periodicity except a slight tendency for the large and small rainfalls, respectively, to occur in groups. Eight of the larger rainfalls have occurred in isolated seasons, and ten of them in groups of three and four each. The small rainfalls have also occurred in groups of about three years.

There is nothing to show how local or general were the rains recorded by the San Diego gage, therefore any deductions from its records may not be strictly applicable to the surrounding district. It would, however, seem that there is very little likelihood that the rainfall for the season 1899–1900 will be smaller than 4 inches, so that the three seasons just past will represent nothing worse than has happened twice before within fifty years, namely, between 1855 and 1860 and between 1869 and 1872. It is now very easy for the planter to estimate how many bad seasons he will have in fifty years and what proportion of capital must be devoted to the storage of water in order to make agriculture profitable on the average of any given number of consecutive years at San Diego.

WIND-ROSES FOR OKLAHOMA.

In the January report of the Oklahoma section Mr. C. M. Strong publishes an extremely interesting bit of climatological work, namely, a so-called wind-rose for the prediction of rainfall. The ordinary wind-rose gives the total number of times of occurrence or the total amount of any meteorological phenomenon, in connection with the wind prevailing at that moment, and shows, for instance, that the northwest wind *is* cold, or that rainfall occurs *with* a southeast wind. But Mr. Strong's table shows what *will follow* a given wind within twelve hours, and that, too, for each month of the year. Apparently it is compiled by counting the number of times that rain fell as recorded at either 8 a. m. or 8 p. m., and accrediting this rain to the wind recorded at the preceding observation. It is based on the nine years 1891–99, inclusive, and we copy it as follows:

TABLE 1.—*Showing the number of times precipitation followed the respective winds within twelve hours.*

Direction.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Average per cent.
North	22	21	14	13	8	5	5	5	9	12	13	17	15
Northeast	10	10	12	7	15	11	19	7	11	4	6	16	13
East	3	2	10	5	11	7	6	7	5	4	3	7	7
Southeast	20	17	23	35	38	34	28	22	13	21	22	9	29
South	20	12	19	27	30	29	20	21	14	19	15	24	26
Southwest	5	0	7	0	7	5	4	5	2	2	2	6	5
West	0	0	0	0	1	0	2	1	0	0	0	0	1
Northwest	3	3	2	8	2	3	3	4	2	1	2	3	4

TABLE 2.—*Showing total number of times each wind direction was observed for each year from* 1891 *to* 1899, *inclusive.*

Year.	N.	NE.	E.	SE.	S.	SW.	W.	NW.	Calm.
1891	126	75	37	208	154	47	12	50	21
1892	128	73	39	195	148	53	18	59	19
1893	116	68	24	180	158	82	18	67	17
1894	119	75	21	131	197	102	22	47	16
1895	152	57	16	133	199	81	18	65	9
1896	127	68	19	162	210	75	15	50	6
1897	126	69	32	110	231	83	20	57	2
1898	134	55	58	93	243	48	28	68	3
1899	128	66	68	80	270	46	17	52	3
Average per cent	18	9	5	20	28	9	2	8	1